

COUNTY OF EL DORADO

HEALTH & HUMAN SERVICES


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To: Board of Supervisors
From: Nancy Williams, MD, MPH, 
Public Health Officer
Subject: COVID-19 vaccine efficacy and other vaccine information
Date: April 6, 2021

Dear Board,

As promised during the 3/23/2021 board meeting, I am providing the following written summary of vaccine information in response to interest expressed in this topic by community members. My assessment continues to be that the vaccines currently in use in the U.S. are extremely effective in the most important outcomes – reducing infection overall and reducing severe disease and death. Several reliable sources of information are shared below.

1. [February 2021 Journal of the American Medical Association \(JAMA\) article](#)
(Table also provided separately)

This article provides the following information about vaccine efficacy.

Vaccine	Overall efficacy after 1 dose	Overall efficacy after 2 doses	Efficacy against severe disease
Moderna	92.1%	94.1% (after 14 days)	100% (14 days after 2 nd dose)
Pfizer-BioNTech	52%	94.6% (after 7 days)	89% (after 1 dose)
Janssen/Johnson & Johnson	72% (after 28 days)	N/A	85% (after 28 days) 100% (after 49 days)

The overall efficacy was based on people developing symptomatic disease.

The differences in numbers of doses, numbers of days between doses, and number of days after the last dose that were used for measurement of effectiveness are due to decisions the individual manufacturers made when they developed their vaccine studies and results (such as at 49+ days following J&J vaccine administration) observed subsequently. Each could have been studied differently but these are the ways they chose.

The more time that passes, the more real-life data will accumulate and shed additional light on efficacy of these and additional vaccines that may come into play in the U.S. But for now, they appear very effective and even though they are not perfect in preventing infections, especially mild and asymptomatic cases, there is reason to believe that those cases are much less likely to

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result in illness spreading. The numbers presented in the table above are subject to change both as more data accumulate and if virus variants evolve against which one or more of the vaccines become less effective.

2. [Blog post on British Medical Journal \(BJM\) *Understanding the spectrum of vaccine efficacy measures*](#)

This is a bit technical, but for people who wish to consider this topic in more depth, it offers considerations about how there is a spectrum of outcomes of interest that follow vaccination. We might care about whether it...

- prevents death from COVID
- prevents symptomatic illness of any kind
- prevents people from becoming infected at all (i.e., no signs of virus upon testing)
- prevents people from being able to transmit virus and infect other people

We might care about all of them. However, no vaccine does all of those things perfectly and this blog post discusses these considerations and notes that more real-life data analysis will help us continue to learn how well the vaccines do in each of these areas.

3. [Centers for Disease Control and Prevention \(CDC\) – Information about the vaccines](#)

The easiest to read, this CDC website provides links to details about the three vaccines currently being used in the U.S., their safety, [effectiveness](#), and what additional vaccines are in the pipeline, among other things. On that [effectiveness page](#) are links to separate summaries about all three of the vaccines.

4. [Vaccine Adverse Events Reporting System \(VAERS\) information](#)

This page includes information about side effects and other adverse effects that follow vaccination with any of the COVID-19 vaccines. Key points copied from this site...

- FDA requires vaccination providers to report any death after COVID-19 vaccination to VAERS.
- Reports of death to VAERS following vaccination do not necessarily mean the vaccine caused the death.
- CDC follows up on any report of death to request additional information and learn more about what occurred and to determine whether the death was a result of the vaccine or unrelated.
- **To date, VAERS has not detected patterns in cause of death that would indicate a safety problem with COVID-19 vaccines.**
- CDC, FDA, and other federal partners will continue to monitor the safety of COVID-19 vaccines.

Keep in mind that many of the early vaccine recipients were nursing home residents, many of whom have relatively short life expectancies and therefore a proportion of them would be expected to die regardless of vaccination status. The reporting of all post-vaccination deaths is required as a precaution because of the desire not to miss detecting links between vaccination and death, if they exist. This oversight is very important, but deaths reported under this system include many (if not exclusively) deaths *not* associated with vaccination.

Attachment: Table from JAMA article